R E P O R T R E S U M E S

ED 020 291 UD 006 147

A COMPARATIVE STUDY OF LANGUAGE APTITUDE AND INTELLIGENCE IN SIXTH-GRADE CHILDREN FROM LOW-SOCIOECONOMIC AND MIDDLE-SOCIOECONOMIC LEVELS.

BY- MASSAD, CAROLYN EMRICK

PUB DATE 19 MAR 68

EDRS PRICE MF-$0.25 HC-$0.40 8P.

DESCRIPTORS- *LANGUAGE STYLES, *LANGUAGE ABILITY, *INTELLIGENCE, *SOCIOECONOMIC STATUS, *CHILDREN, MIDDLE CLASS, LOWER CLASS, COMPARATIVE ANALYSIS, GRADE 6, THOUGHT PROCESSES, LANGUAGE TESTS, INTELLIGENCE TESTS, APTITUDE TESTS, OTIS DUDLEY DUNCAN SOCIOECONOMIC INDEX, MODERN LANGUAGE APTITUDE TEST, COOPERATIVE SCHOOL COLLEGE ABILITY TESTS

THIS STUDY SOUGHT (1) TO CLARIFY THE TERM "LANGUAGE APTITUDE," (2) TO BETTER DEFINE ITS RELATIONSHIP TO INTELLIGENCE, AND (3) TO DETERMINE THE ROLE OF SOCIOECONOMIC LEVEL IN THIS RELATIONSHIP. SUBJECTS WERE SIXTH-GRADE PUBLIC SCHOOL STUDENTS, 93 OF WHOM WERE MIDDLE CLASS AND 39 LOWER CLASS. SOCIAL CLASS WAS DETERMINED BY THE OTIS DUDLEY DUNCAN SOCIOECONOMIC INDEX. LANGUAGE APTITUDE WAS MEASURED BY THE MODERN LANGUAGE APTITUDE TEST (LONG FORM), AND INTELLIGENCE WAS ASSESSED BY THE COOPERATIVE SCHOOL AND COLLEGE ABILITY TESTS. FINDINGS SHOW THAT LANGUAGE APTITUDE "IS NOT A UNIFIED DIMENSION OF THE COGNITIVE DOMAIN AS IS INTELLIGENCE." HOWEVER, SUBJECTS FROM DIFFERENT SOCIOECONOMIC LEVELS USE DIFFERENT PROCESSES IN THINKING ABOUT LANGUAGE. MIDDLE-CLASS CHILDREN TEND TO APPROACH ALL TASKS INVOLVING INTERRELATIONSHIPS AMONG MEANING, SOUND, AND SYMBOLS IN THE SAME WAY BUT TO USE A DIFFERENT APPROACH TO SENTENCE STRUCTURE. LOWER-CLASS CHILDREN APPEAR TO USE DIFFERENT APPROACHES FOR TASKS INVOLVING STRUCTURAL RELATIONS, SOUND-SYMBOL MEANING RELATIONS, AND SYMBOL RECOGNITION. THE EXPLANATION FOR THESE DIVERGENT APPROACHES LIES IN THE FACT THAT LOWER-CLASS CHILDREN USUALLY USE TWO DIFFERENT LANGUAGES--"PUBLIC" FOR HOME AND THE NEIGHBORHOOD, AND "FORMAL" FOR SCHOOL. SOME CONFUSION BETWEEN THE TWO LANGUAGES MAY DEVELOP, OR DIFFERENT SETS OF REFERENTIAL MEANINGS MAY BE USED FOR THE LANGUAGE LEARNED AT SCHOOL. THIS PAPER WAS PREPARED FOR THE 1968 ANNUAL MEETINGS OF AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (MARCH 19, 1968). (NH)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED 022001

A COMPARATIVE STUDY OF LANGUAGE APTITUDE AND INTELLIGENCE IN SIXTH-GRADE CHILDREN FROM LOW-SOCIOECONOMIC AND MIDDLE-SOCIOECONOMIC LEVELS

Carolyn Emrick Massad
Educational Testing Service

Evidence that language may mold thinking has been presented by Piaget (1926), Watts (1944), Ervin and Osgood (1954), Whorf (1956), Lambert Havelka, and Crosby (1958), Staats (1961), Vygotskii (1962), Carroll (1964), Ausubel (1964), and Deutsch (1965) among others. However, there is no clear understanding of the manner in which language may affect the intellectual processes.

Carroll (1958) indicated that only certain factors of ability tested by general intelligence tests should be included in a language aptitude test because intelligence is very complex and the commonly employed intelligence tests measure a number of abilities simultaneously. Further, Eels (1953), Anastasi and Cordova (1953), and Deutsch (1964), among others, have indicated that language differences and/or cultural deprivation affect performance on intelligence tests.

The need to determine the interrelationships between language aptitude -- an individual's capacity to learn language -- and intelligence -- an individual's intellectual capacity -- is apparent. Consequently, the major objectives of this study were to: (a) work toward a clearer definition of the term language aptitude; (b) better define the relationship between language aptitude and intelligence; and (c) clarify the role socioeconomic level has to play in determining this relationship.

UD 006 147

This paper was prepared for the 1968 annual meetings of American Educational Research Association (March 19, 1968).

Procedure

Subjects

The subjects were 132 sixth-grade, public school pupils, 93 of which were from a middle-socioeconomic level area (Area A) and 39 of which were from a low-socioeconomic level area (Area B) of northeastern Ohio. In studying the occupations of the parents as reported by the subjects, it was found that according to the Otis Dudley Duncan Socioeconomic Index (Reiss, 1961) none of the parents of those in the group from Area B would place above 15 (on a one hundred point scale) when employed, while the parents of those in the group from Area A would place between 23 and 96 -- many in this group having both parents employed. The mean scale placement of parents of children studied in Area A was 55.12; the standard deviation was 12.1. The mean scale placement of the parents of children studied in Area B was 6.13; the standard deviation was 2.18.

Materials and Collection of Data

The procedures for assessing language aptitude involved the administration of the Modern Language Aptitude Test (Psychological Corporation, 1959). The long form of this test was used. The five parts and the traits measured by each part may be described as follows: (a) Number Learning, which purports to measure an aspect of memory and auditory alertness; (b) Phonetic Script, which was designed to measure sound-symbol association ability and memory for speech sounds; (c) Spelling Clues, which depends a great deal on the student's English vocabulary, but happens to measure sound-symbol association ability also; (d) Words in Sentences, which purports to measure sensitivity to grammatical structure; and (e) Paired Associates, which is believed to measure rote memory. Due to the fact that the Modern Language Aptitute Test has only been used at the ninth grade level or above, certain time adjustments were made giving as much time as needed for everyone to finish the work

he wished to do. The exception to this was in Part III, Spelling Clues, where some extra time was given but it retained the aspect of a speed test rather than a power test, which all other parts are considered to be.

The procedures for assessing intelligence involved the administration of the Cooperative School and College Ability Tests (Educational Testing Service, 1957). Form 5A of this test battery was used. Both a verbal and a quantitative measure of aptitude is available from this test.

Analysis of Data

The reliability of the four parts of the Modern Language Aptitude Test which are considered to be power tests were determined by using the Spearman-Brown split-half prophecy formula. The reliability coefficients reflected the experimental nature of the use of the test.

As the Cooperative School and College Ability Tests is a standardized battery and widely used in intellective testing programs, considerable data are already available attesting to its high reliability.

The subjects from the middle-socioeconomic level performed at a significantly higher level than did those from the low-socioeconomic level on all measures. For the Modern Language Aptitude Test, the mean of those from Area A was 85.14; the standard deviation was 22.18. The mean for those from Area B was 44.49; the standard deviation was 10.66. For the Cooperative School and College Ability Tests, the mean of those from Area A was 75.80; the standard deviation was 14.24. The mean for those from Area B was 50.56; the standard deviation was 16.11

Coefficients of determination show that language aptitude, as measured by the instrument in this study, is not a unified dimension of the cognitive domain as is intelligence.

The experimental design basic to this study was a factor analytic design. The factor structures from both the low- and the middle-socioeconomic level areas indicated that attributes labeled language aptitude and intelligence have a great deal in common. However, both the correlation matrixes and the factor structures showed that sixth-grade children from differing socioeconomic levels employ different processes in thinking about language. Tables 1 and 2 indicate the factor structures.

Table 1 - Area A

Variable:	Factor I	Factor II
1. Number Learning	.68	.16
2. Phonetic Script	.77	.01
3. Spelling Clues	.70	.09
4. Words in Sentences	.13	.97
5. Paired Associates	.59	.13

Table 2 - Area B

Variable:	Factor I	Factor II	Factor III
1. Number Learning	.66	-.16	.20
2. Phonetic Script	-.04	.11	.68
3. Spelling Clues	.03	.89	.10
4. Words in Sentences	.69	.22	-.02
5. Paired Associates	.24	-.02	.41

The children from the middle-socioeconomic level tend to approach all tasks involving the interrelations among meaning, sound, and symbols in much the same way, and in a way different from their approach to sentence structure. In contrast, the sixth-grade children in the low-socioeconomic level group seem to have separate approaches for structural relations, for sound-symbol meaning relations, and also for recognition of symbols.

Discussion

In order to understand why the low-socioeconomic level children have more approaches to language than the middle-socioeconomic level group, the language of their "world" must be considered. Children from the low-socioeconomic level usually operate with two languages when they are of school age. One language, termed "public," is used in the home or neighborhood. The other, termed "formal," is used at school where it is usually learned. The latter is used much less than the former by these children (Bernstein, 1965). It would appear that confusion between the two languages may develop or that, like bilinguals who have learned their second language in school, the low-socioeconomic level children may develop different sets of referential meanings for the language learned at school (Ervin and Osgood, 1954; Lambert, Havelka and Crosby, 1958). Also, a child, accustomed to the combinations of the sounds in his "public" language, might not be able to recognize the combinations of the sounds of "formal" language. As Pavenstedt (1965) pointed out, children from low-class families form their words so poorly as to make it impossible to understand them at the age of three or four. In addition, Bloom, Davis, and Hess (1965) indicated that the culturally deprived child has not had the same opportunity as other children in using language in the home; the language of the culturally deprived child is not as complex as that of other children either. Training, or lack of it, may be reflected in children's approaches to language learning.

In conclusion, the data presented in the study has led the investigator to believe that language aptitude is not a unified dimension of the cognitive processes which is independent of intelligence; this being true regardless of socioeconomic level. However, the problem of specifically defining the interrelationships at all age and socioeconomic levels remains to be done. It has been noted that certain

groups of adults (Carroll, 1958) do not show the same differentiation of abilities contributing to language aptitude as do sixth-grade children. Nor do children from differing socioeconomic levels show the same differentiation of abilities or of approaches to language learning.

BIBLIOGRAPHY

Anastasi, A., and Cordova, F.A. "Some Effects of Bilingualism upon the Intelligence Test Performance of Puerto Rican Children in New York City," Journal of Educational Psychology, 1953, 44, 1-19.

Ausubel, D.P. "How Reversible are the Cognitive and Motivational Effects of Cultural Deprivation? Implications for Teaching the Culturally Deprived Child," Urban Education, 1964, 1, 16-38.

Bernstein, B., "Social Class and Linguistic Development: A Theory of Social Learning," An abstract presented in B. Bloom, A. Davis, and R. Hess, Compensatory Education for Cultural Deprivation. New York: Holt, Rinehart and Winston, 1965. Pp. 81-82.

Bloom, B., Davis, A , and Hess, R. Compensatory Education for Cultural Deprivation. New York: Holt, Rinehart and Winston, 1965.

Carroll, J.B., "A Factor Analysis of Two Foreign Language Aptitute Batteries," Journal of General Psychology, 1958, 59, 3-19.

Carroll, J.B. Language and Thought. Englewood Cliffs, New Jersey: Prentice-Hall, 1964.

Deutsch, M. Communication of Information in the Elementary School Classroom. Washington, D.C.: U.S. Department of Health, Education and Welfare, Office of Education, Cooperative Research Program, 1964.

Deutsch, M. "The Role of Social Class in Language Development and Cognition," American Journal of Orthopsychiatry, 1965, 35, 78-88

Eels, K. "Some Implications for School Practices of the Chicago Studies of Cultural Bias in Intelligence Tests," Harvard Educational Review, 1953, 23, 284-297.

Ervin, S.M., and Osgood, C.E. "Second Language Learning and Bilingualism," In C.E. Osgood and T.A. Sebeok (Eds.), "Psycholinguistics: A Survey of Theory and Research Problems," Journal of Abnormal and Social Psychology, 1954, 49, 139-146.

Lambert, W.E., Havelka, J., and Crosby, C. "The Influence of Language Acquisition Contexts on Bilingualism," Journal of Abnormal and Social Psychology, 1958, 56, 239-244.

Pavenstedt, E. " A Comparison of the Child-Rearing Environment of Upper-Lower and Very Low Lower Class Families," American Journal of Orthopsychiatry, 1965, 35, 89-98.

Piaget, J. The Language and Thought of the Child. New York: Harcourt, Brace and Company, 1926.

Reiss, A.J. with Duncan, O.D., Hatt, P.K., and North, C.C. Occupations and Social Status. New York: The Free Press of Glencoe, 1961.

Staats, A.W. "Verbal Habit Families, Concepts, and the Operant Conditioning of Word Classes," Psychological Review, 1961, 68, 190-204.

Vygotskii, L.S. Thought and Language. Cambridge: The Massachusetts Institute of Technology Press, 1962.

Watts, A.F. The Language and Mental Development of Children. Boston: D.C. Heath and Company, 1944.

Whorf, B.L. Language, Thought, and Reality. New York: The Technology Press of Massachusetts Institute of Technology and Wiley and Sons, 1956.